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Edition 1.0 2010-01

INTERNATIONAL STANDARD

NORME INTERNATIONALE

International lamp coding system (ILCOS)

Système international de codification des lampes (ILCOS)

IEC 61231:2010

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CONTENTS

FOREWORD ... 3
INTRODUCTION ... 5
1 Scope and object ... 6
2 Normative references ... 6
3 Principles ... 6
4 Basic structure ... 7
4.1 Letter section ... 7
4.2 Figure section ... 7
4.3 Length of the code ... 8
5 Lamp categories ... 9
5.1 Tungsten filament lamps ... 9
5.2 Tungsten halogen lamps (non-vehicle) ... 12
5.3 Fluorescent lamps ... 13
5.4 High-pressure sodium vapour lamps ... 17
5.5 Low-pressure sodium vapour lamps ... 18
5.6 High-pressure mercury vapour lamps ... 19
5.7 Metal halide lamps ... 19
5.8 LED modules ... 21
5.9 Special lamps ... 22
Annex A (informative) Survey ILCOS L – short version, letter section ... 23
Bibliography ... 24

Table 1 – Dimensions ... 15

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

INTERNATIONAL LAMP CODING SYSTEM (ILCOS)

FOREWORD

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International Standard IEC 61231 has been prepared by subcommittee 34A: Lamps, of IEC technical committee 34: Lamps and related equipment.

This first edition cancels and replaces the second edition of IEC 61231, published as a technical specification. It constitutes a technical revision, of which the main changes are indicated below:

– introduction of LED modules (Subclause 5.8).

The text of this standard is based on the following documents:

CDV	Report on voting
34A/1345/CDV	34A/1374/RVC

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

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- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
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INTRODUCTION

The lamp industry strives continuously to meet customers' needs. Its innovative power has led to a tremendous variety of different light sources. To enable customers and experts to find their way within the diversity of products, a general system for the coding of lamps has been developed.

The code does not replace specific markings used by individual manufacturers on their lamps or in their catalogues, but it is promoted for cross-referencing purposes and, in due course, to replace national and regional lamp coding systems which already exist.

NOTE The code does not give all the technical characteristics necessary to specify a lamp fully. For this the relevant lamp standard and/or the manufacturer's literature have to be consulted.

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INTERNATIONAL LAMP CODING SYSTEM (ILCOS)

1 Scope and object

This International Standard gives the rules for the international lamp coding system and covers all lamp categories, excluding vehicle lamps. Coding for the main lamp types is specified and, for the others, will follow by amendments to this standard as appropriate.

The object of the international lamp coding system is

– to improve communication about the different types of lamps;
– to help in discussions concerning interchangeability and compatibility of products;
– to create a closer relationship between international standards and manufacturers' literature (for example the code could be given in future in the relevant parts of a standard);
– to enable correct replacements of lamps;
– to be used as a complementary marking on the luminaire;
– to replace national and regional coding systems.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60357, *Tungsten halogen lamps (non-vehicle) – Performance specifications*

IEC 60432-1, *Incandescent lamps – Safety specifications – Part 1: Tungsten filament lamps for domestic and similar general lighting purposes*

IEC 60432-2, *Incandescent lamps – Safety specifications – Part 2: Tungsten halogen lamps for domestic and similar general lighting purposes*

IEC 60838-2-2, *Miscellaneous lampholders – Part 2-2: Particular requirements – Connectors for LED-modules*

IEC/TR 60887, *Glass bulb designation system for lamps*

IEC 61167, *Metal halide lamps*

CIE publication 29.2, *Guide on interior lighting*

3 Principles

The international lamp coding system has been developed on the basis of the following principles.

– It should be manufacturer-independent concerning its content and its wording.
– A relationship between the coding system and international standards should be established.

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– It should be internationally acceptable. It is recognized that other systems with national and regional importance exist and that the change to an international code should be seen as a long-term process.
– The length of the code should be as short as possible and as long as necessary. Therefore, it should be possible to use the code in different lengths depending on the different purposes.
– In view of the technical diversity of the different lamp categories, it would not be practical to define the code for all types in the same way; the code depends therefore in its composition on the technical needs of the different lamp categories.
– The code should not replace manufacturer-specific marking on the lamp or in the catalogues, but should be used for cross-references in lamp and luminaire literature.
– The allocation of codes is based on interchangeability and compatibility.

An additional usage of the code on the lamp package should be envisaged for the future.

4 Basic structure

The complete lamp code ILCOS consists of a letter section and a figure section.

4.1 Letter section

The first letter of the letter section designates the lamp category as follows:

I Tungsten filament lamps
H Tungsten halogen lamps (non-vehicle)
F Fluorescent lamps
S High-pressure sodium lamps
L Low-pressure sodium lamps
Q High-pressure mercury lamps
M Metal halide lamps
D LED modules
X Special lamps

NOTE Vehicle lamps, including their coding, are covered by national and/or regional legislation.

The next letters within the letter section give further details as outlined in the description of the different lamp categories. The letter section is separated from the rest by a hyphen.

4.2 Figure section

The figure section consists of several blocks mainly containing figures. Each block, separated by hyphens, contains characteristic values of lamps such as

– wattage;
– voltage;
– lamp cap;
– dimensional values.

As a hyphen is used to separate the blocks, it cannot be applied within a block. As a consequence, the sign of equality = is used instead of the hyphen, for example within the cap designation.

The sequence and the specific content of the blocks is determined for each lamp category and described in 5.1 to 5.8.

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4.3 Length of the code

4.3.1 General

The code can be used in different lengths depending on the purpose. In catalogues and leaflets, specialities, for example special applications, can be indicated with an asterisk (*) in the place where the difference occurs or at the end of the code and explained in a separate remark, also indicated with an asterisk (*).

The code can be shortened by deleting parts from the end, not by deleting intermediate parts. In general, if ‘standard’ types are concerned, the dimension block can be omitted. Intermediate parts may be omitted, providing the separating signs such as hyphens (–) and slashes (/) are given.

NOTE These shortening rules do not apply to the extended short version ILCOS LE.

4.3.2 Short version: ILCOS L

The short version consists of the letter section or a part of it and is called ILCOS L. It can be used for the general classification of lamps. A survey of ILCOS L is given in Annex A.

4.3.3 Extended short version: ILCOS LE

The extended short version, where applicable, consists of the first part of the letter section (ILCOS L) immediately followed (without spaces) by the relevant dimensions.

4.3.4 Standard version: ILCOS D

The standard version gives the complete designation and consists of the letter section and (a part of) the figure section. The use of ILCOS D should enable the customer to find the correct lamp type, for example in the case of lamp replacement from a different manufacturer. It can be used for the purpose of marking luminaires, when suitable also in an abbreviated form.

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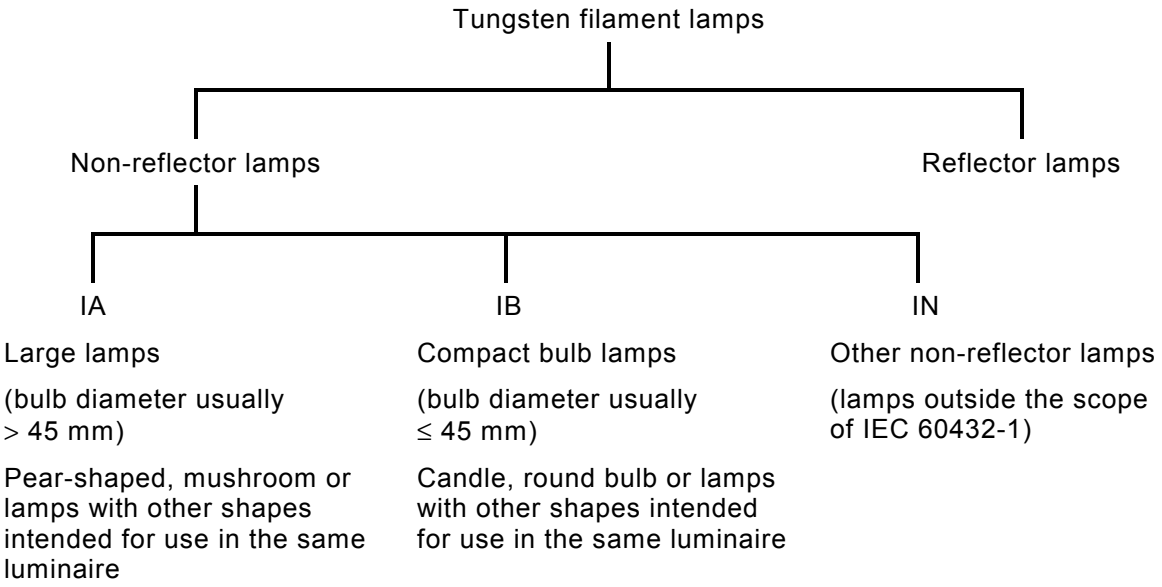
5 Lamp categories

For information about relevant lamp standards and lamp-related standards, see the IEC publications prepared by IEC technical committee 34.

5.1 Tungsten filament lamps

5.1.1 ILCOS L for tungsten filament lamps

The ILCOS L code is built up as follows:



After the first two letters IA, IB and IN the shape of the bulb follows, indicated as specified in IEC 60887.

The main bulb shape types are

_A pear-shaped
_B candle (bulged)
_C conical
_G globular
_M mushroom
_P round bulb
_S pigmy (straight-sided)
_T tubular

An example with a modifier is

_BA candle with angular tip

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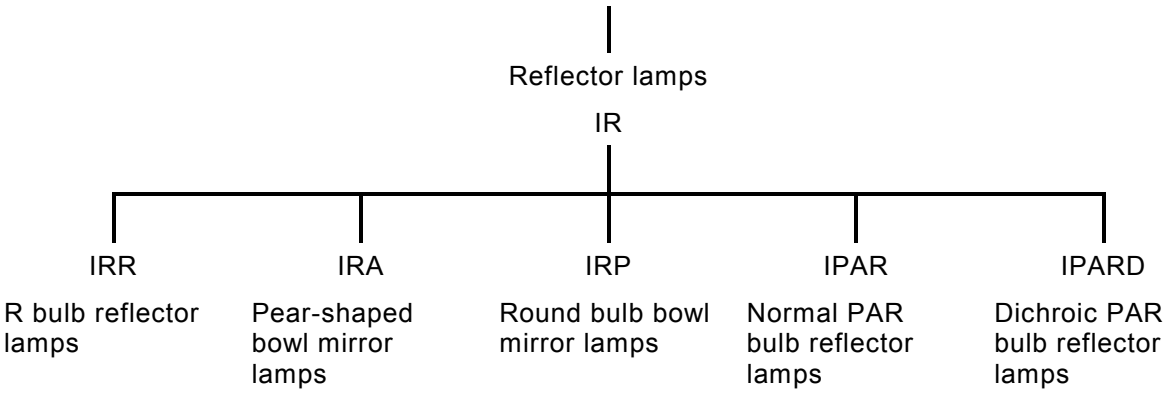
For reflector lamps:



If it is necessary to indicate the finish or the colour of a lamp, or the specific kind of reflector or other technical details, this can be done after a slash as follows:

/C	clear
/F	frosted, frosted equivalently coated
/W	white
/R	red
/B	blue
/G	green
/Y	yellow
/V	violet
/P	pink
/A	amber
/O	orange
/S	silver
/X	gold
/N	neodymium
/D	decorative filament design

A second letter may be added for the following purposes:

/_P	to indicate pastel shades
/_F	to indicate a window
/_T	to indicate transparent colours

Further technical details can be given after a second slash:

//AX	axial filament
//TR	transversal filament
//RS	rough service lamps
//LT	limited surface temperature
//RT	rough service with limited surface temperature

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Examples

IAA/F	Frosted pear-shaped lamps
IAM	Mushroom lamps
IAT/W	White-coated tubular lamps intended for use in the same luminaire as pear-shaped lamps
IBBA/C	Clear candle lamps with angular tip
IBP/R	Red round bulb lamps
IAG	Globular lamps, intended for use in the same luminaire as pear-shaped lamps
IBT/W	White-coated tubular lamps, intended for use in the same luminaire as round bulb lamps IBP
IBC	Conical lamps, intended for use in the same luminaire as round bulb lamps IBP
IRA/S	Pear-shaped bowl mirror lamp with silver reflector

5.1.2 ILCOS LE for tungsten filament lamps

ILCOS LE consists of the first part of ILCOS L up to and including the shape indication followed by the number giving the nominal diameter of the lamp.

Examples

IAA60	Pear-shaped lamp with 60 mm nominal bulb diameter
IBP45	Round bulb lamp with 45 mm nominal bulb diameter
IAG80	Globular lamp with 80 mm nominal bulb diameter

5.1.3 ILCOS D for tungsten filament lamps

ILCOS D consists of the following blocks:

ILCOS L-wattage-rated voltage-lamp cap-dimensions

– **Wattage:** For miniature and/or glow lamps, the lamp current can be indicated in place of the wattage. In that case, the lamp current value shall be immediately followed by a capital A.

– **Rated voltage:** In case of a voltage range, two numbers are given separated by a slash.

– For airfield lamps the lamp voltage may be replaced by the lamp current value immediately followed by a capital A.

– **Dimensions:** This block consists normally only of the number giving the nominal diameter. For tubular lamps the maximum overall length can be added after a slash. For reflector lamps, the beam angle can be added after a slash. In case of a non-symmetrical beam, two numbers separated by a slash may be given, the first describing the horizontal and the second the vertical beam angle.

Examples

IAA/C-40-220/230-E27-60	Clear pear-shaped lamp, 40 W, 220-230 V, cap E27, nominal diameter 60 mm
IBB/W-40---35	White candle lamp, 40 W, nominal diameter 35 mm, rest not specified
IRR-60-240-B22d-125/30	R bulb reflector lamp, 60 W, 240 V, cap B22d, type R125, beam angle 30°

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5.2 Tungsten halogen lamps (non-vehicle)

5.2.1 ILCOS L for tungsten halogen lamps

The first two letters will be

HS Single-ended halogen lamps
HD Double-ended halogen lamps
HR Dichroic reflector halogen lamps
HM Metal reflector halogen lamps
HA Halogen lamps with aluminized glass reflector
HP Single-ended halogen lamps with proximity reflector

Third letter to indicate the field of application of the lamp:

_P Projection including overhead projection and micro-film/-fiche lamps
_S Photo/Studio/Theatre/Video
_A Airfield
_T Traffic signal
_G General purpose (floodlight lamps are considered as general purpose)

A fourth letter can be used to indicate self-shielded lamps. Self-shielded lamps are lamps designed to be suitable for use in open luminaires. Examples of self-shielded lamps are ELV lamps with integral outer envelope, low-pressure tungsten halogen lamps and mains voltage lamps which conform to IEC 60432-2 (for further information, see IEC 60357).

___S Self-shielded halogen lamp

The bulb shape can be indicated after the third or fourth letter as described for tungsten filament lamps.

If it is necessary to indicate the bulb finish, special colours or other technical details, this can be done after one or two slashes as described for tungsten filament lamps (see 5.1.1).

Further technical details can be given after a second slash:

//UB UV reduction
//IB IR utilization
//S Short neck

Examples

HSGST Single-ended general purpose halogen lamps, self-shielded, tubular shaped
HDG Double-ended floodlight halogen lamps
HRG Dichroic reflector general purpose halogen lamps
HMGS Metal reflector general purpose halogen lamps, self-shielded

5.2.2 ILCOS LE for tungsten halogen lamps

ILCOS LE consists of ILCOS L up to the first slash immediately followed by the dimension block as described in 5.2.3.

Examples

HRGS51 General purpose dichroic reflector lamp, self-shielded, with a reflector diameter of 51 mm

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HMGS37 General purpose metal reflector lamp, self-shielded, with a reflector diameter of 37 mm

5.2.3 ILCOS D for tungsten halogen lamps

ILCOS D consists of the following blocks:

ILCOS L-wattage-rated voltage-lamp cap-dimensions

- **Wattage:** In the case of a two-filament lamp, the wattage of each filament is given combined by a (+) sign.

  Where needed for further distinction, this block can be extended by a slash to give information concerning the colour temperature in the following way. The colour temperature of the lamp is divided by 100 and the number obtained is rounded to an integer.

- **Rated voltage:** In case of a voltage range, two numbers are given separated by a slash.

  For airfield lamps, the lamp voltage may be replaced by the lamp current value immediately followed by a capital A.

- **Dimensions:** The content of this block depends on the specific characteristics of the different halogen lamp types. Nominal values are given, except for the bulb diameter of single-ended lamps. It can contain one value and, if needed for further discrimination, a second one after a slash as follows:

  ILCOS L *Dimensions (nominal)*

  HS – Bulb diameter (max.)/light centre length

  HD – Contact to contact length Z_{nom}

  HR – Diameter of reflector/beam angle

  HM – Diameter of reflector/beam angle

  HA – Diameter of reflector/beam angle

  HP – Light centre length

Examples

HSG-20-12-G4-22	Single-ended general purpose halogen lamp, 20 W, 12 V, G4 base, light centre length 22 mm
HDS-800-220/230-R7s-74,9	Double-ended photo/studio halogen lamp, 800 W, 220-230 V, R7s cap, contact-to-contact length 74,9 mm
HRGS-50-12-GX5.3-51/30	Dichroic reflector general purpose halogen lamp, self-shielded, 50 W, 12 V, base GX5.3, diameter 51 mm, beam angle 30°

5.3 Fluorescent lamps

5.3.1 ILCOS L for fluorescent lamps

The first two letters will be

FD Double-capped lamps

FS Single-capped lamps

FB Self-ballasted lamps

Additional information can be indicated by a third letter as follows:

FDR Double-capped lamps with internal reflector

FDU Double-capped lamps, U-shaped

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FSD Single-capped lamps, dual shaped

FSQ Single-capped lamps, quad shaped

FSS Single-capped lamps, square shaped

FSM Single-capped lamps, multi-limbed

FSC Single-capped lamps, circular shaped

FSG Single-capped lamps, globular

For FD and FS lamps a last letter can be added to indicate:

..H For high frequency ballasts only

..I Induction type lamp

For FB lamps the shape can be indicated as described for tungsten filament lamps (see 5.1.1). A last letter can be added to indicate:

...H Integral HF type ballast

...I Integral induction type ballast

Colours or other bulb finishes can be indicated after a slash, as described for tungsten filament lamps (see 5.1.1).

Further technical details can be given after a second slash as follows:

//L For use in low ambient temperatures

//H For use in high ambient temperatures

//P Photocell integrated

//PL Photocell integrated and for use in low ambient temperatures

//PH Photocell integrated and for use in high ambient temperatures

5.3.2 ILCOS LE for fluorescent lamps

ILCOS LE consists of ILCOS L (up to the first slash) immediately followed by the relevant dimensions.

Examples

FD26 Double-capped lamp with nominal tube diameter 26 mm

FD38/1200 Double-capped lamp with nominal tube diameter 38 mm and nominal tube length 1 200 mm (hence 40 W).

FD/1200 Double-capped lamp with nominal tube length 1 200 mm (36 W or 40 W)

5.3.3 ILCOS D for fluorescent lamps

ILCOS D consists of the following blocks:

ILCOS L-wattage-starting details *(note)*-lamp cap-dimensions

NOTE For self-ballasted lamps, the rated voltage is given instead of the starting details; if necessary, extended after a slash by the rated frequency.

– **Wattage:** The block specifying wattage can be extended by a slash to give information concerning the colour temperature and after another slash concerning the colour-rendering properties in the following way.

  The colour temperature of the lamp is divided by 100 and the number obtained is rounded to an integer.

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